

IN THE CLAIMS:

1. (Previously Amended) In a base station of a Code Division Multiple Access (CDMA) mobile communication system capable of compensating a route delay factor on a communication route between a base station and a mobile station such as on a relay unit, a base station for compensating a route delay factor fixed between a base station and a mobile station of a CDMA mobile communication system, comprising:

a clock signal generation unit for receiving a 10MHz, Time Of Day (TOD) and 1 Pulse Per Second (PPS) signal from a Global Positioning System (GPS) receiving unit and generating a 1st even second clock signal in synchronization with the 1 PPS and a 2nd even second clock signal which is obtained by delaying the 1st even second clock signal by a maximum bidirectional propagation delay time between a base station and a relay unit;

a first signal processing unit for receiving the 1st even second clock signal from the clock signal generation unit and modulating a forward link channel from the base station to a mobile station in synchronization with the 1st even second clock signal; and

a second signal processing unit for receiving the 2nd even second clock signal from the clock signal generation unit and demodulating a backward link channel from the mobile station to the base station in synchronization with the 2nd even second clock signal.

2 (Currently Amended) The base station of claim 1, wherein said first signal processing unit includes:

[more than one] channel elements including a set of base station modem

Application Specific Integrated Circuits (ASICs) for modulating a digital signal;
[more than one] channel cards formed of a channel card for controlling the
channel element and for [thereby] modulating a forward link channel; and
an analog demodulation unit including a Digital to Analog (D/A) converter for
receiving a digital signal from the channel card and a Quadrature Phase Shift Keying (QPSK)
modulation unit for receiving an analog signal from the D/A converter and [the] QPSK-
modulating the [same] received analog signal.

3 (Currently Amended) The base station of claim 1, wherein said second
signal processing unit includes:

[more than one] channel cards including [more than one] channel elements
having a set of base station modem ASICs for demodulating a digital signal and[.] a channel
card processor for controlling the channel element; and
an analog demodulation unit having a [Quaternary] Quadrature Phase Shift
Keying (QPSK) [demodulator] demodulation unit for receiving a Radio Frequency (RF)
signal and QPSK-demodulating the received RF signal and an Analog to Digital (A/D)
converter for receiving a QPSK demodulation signal from the QPSK demodulation unit and
converting the received QPSK demodulation signal into a digital signal.

4. (Previously Amended) The base station of claim 1, wherein said first and
second signal processing units each include a channel card and an analog modulation and

demodulation unit, and said channel card is formed of a plurality of channel elements and a channel card processor for controlling the channel element, and said channel elements are divided into two parts in which a forward channel and backward channel are modulated and demodulated, respectively, and said analog modulation and demodulation includes a Digital to Analog (D/A) converter for receiving a digital signal from the channel card and converting the received digital signal into an analog signal, a Quadrature Phase Shift Keying (QPSK) modulation unit for receiving an analog signal from the D/A converter and the QPSK-modulating the received analog signal, a QPSK-demodulator for receiving a Radio Frequency (RF) signal and the QPSK-demodulating the received RF signal and an A/D converter for receiving a QPSK demodulation signal from the QPSK demodulator and converting the QPSK demodulation signal into a digital signal.

5. (Previously Amended) The base station of claim 1, further comprising a Radio Frequency (RF) signal processing means connected between the first and second signal processing units and the relay unit and having a RF transmission unit for receiving a forward link channel from the first signal processing unit and modulating to a high frequency and a RF receiving unit for receiving a backward channel signal from the relay unit and modulating to a low frequency.

6. (Previously Amended) A base station operation method for compensating a fixed route delay factor between a base station and a mobile station of a Code Division Multiple Access (CDMA) mobile communication system, comprising the steps of:

a first step in which a clock generation unit receives a 10MHz, Time Of Day (TOD), and 1 Pulse Per Second (PPS) from a Global Positioning System (GPS) receiving unit and generates a 1st even second clock signal in synchronization with the 1 PPS and a

2nd even second clock signal obtained by delaying the 1st even second clock signal by a maximum bidirectional propagation delay time between the base station and a relay unit; a second step in which first and second signal processing units receive 1st and 2nd even second clock signals and modulate a pilot channel, a synchronous channel and a call channel from the first signal processing unit in synchronization with the 1st even second clock signal;

a third step in which when an access channel is transmitted from the mobile station, the second signal processing detects and demodulates the access channel from the mobile station in synchronization with the 2nd even second clock signal;

a fourth step in which the first signal processing unit modulates a communication channel in synchronization with the 1st even second clock signal; and a fifth step in which when a communication channel is transmitted from the mobile station, the second signal processing unit detects and demodulates the communication channel from the mobile station in synchronization with the 2nd even second clock signal.

7. (Previously Amended) In a base station of a Code Division Multiple Access (CDMA) mobile communication system capable of compensating a route delay factor on a communication route between a base station and a mobile station such as on a relay unit, a base station for compensating a route delay factor fixed between a base station and a mobile station of a CDMA mobile communication system, comprising:

a clock signal generation unit for receiving a 10MHz, Time Of Day (TOD) and 1 Pulse Per Second (PPS) signal from a Global Positioning System (GPS) receiving unit and generating a 1st even second clock signal in synchronization with the 1 PPS and a 2nd even second clock signal which is obtained by delaying the 1st even second clock signal by a maximum bidirectional propagation delay time between a base station and a relay unit;

a first signal processing unit for receiving the 1st even second clock signal from the clock signal generation unit and modulating a pilot channel, a synchronous channel and a call channel of a forward link from the base station to a mobile station in synchronization with the 1st even second clock signal; and

a second signal processing unit for detecting a communication channel from the clock signal generation unit in synchronization with the 2nd even second clock signal and modulating the communication channel of the forward link from the base station to the mobile station by expediting by the maximum bidirectional propagation delay time between the base station and the relay unit.

8. (Currently Amended) The [method] base station of claim 7, wherein said first signal processing unit includes:

[more than one] channel cards, each including [which includes more than one] channel elements having a set of base station modem Application Specific Integrated Circuits (ASICs) for modulating a digital signal and a channel card processor for controlling the

channel element and for [thereby] modulating a pilot channel, a synchronous channel and a call channel of the forward link; and

an analog modulation unit which includes a Digital to Analog (D/A) converter for receiving a digital signal from the channel card and converting the received digital signal into an analog signal, and a Quadrature Phase Shift Keying (QPSK) modulation unit for receiving an analog signal from the D/A converter and QPSK-modulating the received analog signal.

9. (Currently Amended) The [method] base station of claim 7, wherein said second signal processing unit includes:

[more than one] channel cards, each including [which includes more than one] channel elements having a set of base station modem Application Specific Integrated Circuits (ASICs) for demodulating a digital signal and a channel card for controlling the channel element and for [thereby] modulating a communication channel of a forward link by expediting by a maximum bidirectional propagation delay time; and

an analog modulation and demodulation unit which includes a Digital to Analog (D/A) converter for receiving a digital signal from the channel card and converting the received digital signal into an analog signal, a QPSK modulator for receiving an analog signal from the D/A converter and QPSK-modulating the received analog signal, a QPSK demodulation unit for receiving a Radio Frequency (RF) signal and QPSK-demodulating the

[same] received RF signal, and an A/D converter for receiving a QPSK demodulation signal from the QPSK demodulation unit and converting the QPSK demodulation signal into a digital signal.

10. (Currently Amended) The [method] base station of claim 7, wherein said first and second signal processing units include a channel card and an analog modulation and demodulation unit, and said channel card includes a plurality of channel elements and a channel card processor for controlling the channel elements, and said channel elements are divided into three portions in which a first portion of the three portions [the channel elements] modulates a pilot channel, a synchronous channel and a call channel of a forward link, a second portion modulates a communication channel of [a] the forward link and a third portion modulates a backward link channel, and said analog modulation and demodulation unit includes a Digital to Analog (D/A) converter for receiving a digital signal from the channel card and converting the received digital signal into an analog signal, a QPSK modulation unit for receiving [an] the analog signal from the D/A converter and QPSK-modulating the received analog signal, a QPSK demodulation unit for receiving a Radio Frequency (RF) signal and QPSK-demodulating the received RF signal, and an Analog to Digital (A/D) converter for receiving a QPSK demodulation signal from the QPSK demodulation unit and converting the received QPSK [demodulated] demodulation signal into a digital signal.

11. (Previously Amended) The base station of claim 7, further comprising a Radio Frequency (RF) signal processing means connected between the first and second signal processing units and a relay unit and having a RF transmission unit for receiving a forward link channel from the first and second signal processing units and modulating to a high frequency, and a RF receiving unit for receiving a backward channel signal from the

relay unit for modulating to a low frequency.

12. (Previously Amended) A base station operation method for compensating a fixed route delay factor between a base station and a mobile station of a Code Division Multiple Access (CDMA) mobile communication system, comprising the steps of:

a first step in which a clock signal generation unit receives a 10MHz, Time Of Day (TOD) and 1 Pulse Per Second (PPS) signal from a Global Positioning System (GPS) receiving unit and generates a 1st even second clock signal in synchronization with the 1PPS and a 2nd even second clock signal by delaying the 1st even second clock signal by the maximum bidirectional propagation delay time between a base station and a relay unit;

a second step in which first and second signal processing units receive 1st and 2nd even second clock signals and modulate a pilot channel, a synchronous channel and a call channel from the first signal processing unit in synchronization with the 1st even second clock signal;

a third step when an access channel is transmitted from the mobile station, the second signal processing unit detects and demodulates an access channel from the mobile station in synchronization with the 2nd even second clock signal;

a fourth step in which the second signal processing unit modulates a communication channel of a forward link from a base station to a mobile station by expediting by the maximum bidirectional delay time between a base station and a relay unit;

and

a fifth step in which when a communication channel is transmitted from the mobile station, the second signal processing unit detects and demodulates a communication channel from the mobile station in synchronization with the 2nd even second clock signal.

13. (Currently Amended) In a base station of a Code Division Multiple Access (CDMA) mobile communication system for compensating a router delay factor on a communication route between a base station and a mobile station such as a relay unit, a base station for compensating a fixed route delay factor between a base station and a mobile station of a CDMA mobile communication system, comprising:

a clock signal generating unit for receiving a 10MHz, Time Of Day (TOD) and 1 Pulse Per Second (PPS) signal from a Global Positioning System (GPS) receiving unit and generating a 1st even second clock signal in synchronization with the 1 PPS;

a [1st] first signal processing unit for receiving the 1st even second clock signal from the clock signal generation unit, modulating a pilot channel, a synchronous channel and a call channel of a forward link from a base station to a mobile station by expediting by the maximum bidirectional propagation delay time and detecting and demodulating an access channel of the backward link from the mobile station to the base station in synchronization with the 1st even second clock signal; and

a [2nd] second signal processing unit for receiving the 1st even second clock

signal from the clock signal generation unit, modulating a communication channel of a forward link from the base station to the mobile station by expediting by the maximum bidirectional propagation delay time between the base station and the relay unit and detecting and demodulating a communication channel of a backward link from the mobile station to the base station in synchronization with the 1st even second clock signal.

14. (Currently Amended) The base station of claim 13, wherein said [1st] first signal processing unit includes:

[more than one] channel cards, each including [which includes more than one] channel elements having a set of base station modem Application Specific Integrated Circuits (ASICs) for modulating and demodulating a digital signal, and a channel card processor for controlling the channel element and for [thereby] modulating a pilot [5] channel, a synchronous channel and a call channel of a forward link by expediting by the maximum bidirectional propagation time between the base station and the relay unit; and

an analog modulation and demodulation unit which includes a Digital to Analog (D/A) converter for receiving a digital signal from the channel card and converting the received digital signal from the channel card into an analog signal, a Quadrature Phase Shift Keying (QPSK) modulation unit for receiving [an] the analog signal from the D/A converter and QPSK-modulating the received analog signal, a QPSK demodulation unit for receiving a Radio Frequency (RF) signal and QPSK-demodulating the received RF signal,

and an Analog to Digital (A/D) converter for receiving a QPSK demodulation signal from the QPSK demodulation unit and converting the QPSK demodulation signal into a digital signal.

15. (Currently Amended) The base station of claim 13, wherein said [2nd] second signal processing unit includes:

[more than one] channel cards, each including [which includes more than one] channel [20] elements having a set of base station [model] modem Application Specific Integrated Circuits (ASICs) for [thereby] modulating and demodulating a digital signal, and a channel card processor for controlling the channel element, for [thereby] modulating a communication channel of a forward link and for detecting and demodulating a communication channel of a backward link; and

an analog modulation and demodulation unit which includes a Digital to Analog (D/A) converter for receiving a digital signal from the channel card and converting the received digital signal into an analog signal, a Quadrature Phase Shift Keying (QPSK) modulation unit for receiving [an] the analog signal from the D/A converter and QPSK-modulating the received analog signal, a QPSK demodulation unit for receiving a radio frequency (RF) signal and QPSK-demodulating the received RF signal, and [-]an Analog to Digital (A/D) converter for receiving a QPSK demodulation signal from the QPSK demodulation unit and converting the QPSK demodulation signal into a digital signal.

16 (Currently Amended) The [method] base station of claim 13, wherein said

[1"st] first and [2"nd] second signal processing units include a channel card and an analog modulation and demodulation unit, and said channel card includes a plurality of channel elements and a channel card processor for controlling the channel elements, and said channel elements modulate[s] a pilot channel, a synchronous channel and a call channel of a forward link, demodulate[s] an access channel of a backward link, modulate[s] a communication channel of [a] the forward link and demodulate[s] a communication channel of a backward link channel, and said analog modulation and demodulation unit includes a Digital to Analog (D/A) converter for receiving a digital signal from the channel card and converting the received digital signal [from the channel card] into an analog signal, a [Quaternary] Quadrature Phase Shift Keying (QPSK) modulation unit for receiving [an] the analog signal from the D/A converter and QPSK-modulating the received analog signal, a QPSK demodulation unit for receiving a Radio Frequency (RF) signal and QPSK-modulating the received RF signal, and an Analog to Digital (A/D) converter for receiving a QPSK demodulation signal from the QPSK demodulation unit and converting the received QPSK demodulation signal into a digital signal.

17. (Previously Amended) The base station of claim 13, further comprising a Radio Frequency (RF) signal processing means connected between the first and second signal processing units and a relay unit and having a RF transmission unit for receiving a forward link channel from the first and second signal processing units and modulating to a high frequency, and a RF receiving unit for receiving a backward channel signal from the relay unit for modulating to a low frequency.

18. (Currently Amended) A base station operation method for compensating a fixed route delay factor between a base station and a mobile station of a Code Division Multiple Access (CDMA) mobile communication system, comprising the steps of:

a [1"st] first step in which a clock signal generation unit receives a 10MHz, Time Of Day (TOD) and 1 Pulse Per Second (PPS) signal from a Global Positioning System (GPS) receiving unit and generates a 1st even second clock signal in synchronization with the 1 PPS;

a second step in which said [1"st] first and [2"nd] second signal processing units receive a 1st even second clock signal and modulate a pilot channel, a synchronous channel and a call channel by expediting by the maximum bidirectional propagation delay time between a base station to a relay unit;

a third step in which when an access channel is transmitted from the mobile station, the [1"st] first signal processing unit detects and demodulates an access channel from the mobile station in synchronization with the 1st even second clock signal;

a fourth step in which the [2"nd] second signal processing unit modulates [25] a communication channel of a forward link from the base station to the mobile station by expediting by the maximum bidirectional propagation delay time between the base station and the relay unit; and

a fifth step in which when a communication channel is transmitted from the mobile station, the [2"nd] second signal processing unit detects and demodulates the communication channel from the mobile station in synchronization with the 1st even second

clock signal.

19. (Currently Amended) In a base station of a Code Division Multiple Access (CDMA) mobile communication system capable of compensating a route delay factor on a communication route between a base station and a mobile station such as on a relay unit, a base station for compensating a route delay factor fixed between a base station and a mobile station of a CDMA mobile communication, comprising:

a clock signal generation unit for receiving a 10MHz, Time Of Day (TOD) and 1 Pulse Per Second (PPS) signal from a Global Positioning System (GPS) receiving unit and generating a 1st even second clock signal in synchronization with the 1 PPS and a 3rd even second clock signal which is obtained by delaying the 1st even second clock signal by a maximum bidirectional propagation delay time between a base station and a relay unit;

a signal processing unit for receiving a 3rd even second clock signal from the clock signal generation unit and for modulating and transmitting a forward link channel from [a] the base station to a mobile station in synchronization with the 3rd even second clock signal; and

a signal processing unit for receiving the 1st even second clock [25] signal from the clock signal generation unit and for detecting and demodulating a backward link channel from the mobile station to the base station in synchronization with the 1st even second clock signal.

20. (Previously Amended) In a base station of a Code Division Multiple Access (CDMA) mobile communication system capable of compensating a route delay factor on a communication route between a base station and a mobile station such as on a relay unit, a base station for compensating a route delay factor fixed between a base station and a mobile station of a CDMA mobile communication system, comprising:

a clock signal generation unit for receiving a 10MHz, Time Of Day (TOD) and 1 Pulse Per Second (PPS) signal from a Global Positioning System (GPS) receiving unit and generating a 1st even second clock signal in synchronization with the 1 PPS and a 3rd even second clock signal which is obtained by delaying the 1st even second clock signal by a maximum bidirectional propagation delay time between a base station and a relay unit;

a signal processing unit for receiving the 3rd even second clock signal from the clock signal generation unit and modulating a pilot channel, a synchronous channel and a call channel of a forward link from a base station to a mobile station in synchronization with the 3rd even second clock signal; and

a signal processing unit for receiving the 1st even second clock signal from the clock signal generation unit, demodulating a backward link channel from the mobile station to the base station in synchronization with the 1st even second clock signal and modulating a communication channel of a forward link from the base station to the mobile station by expediting by the maximum bidirectional propagation delay time between the base station to the relay unit.

20. (Previously Amended) In a base station of a Code Division Multiple Access (CDMA) mobile communication system capable of compensating a route delay factor on a communication route between a base station and a mobile station such as on a relay unit, a base station for compensating a route delay factor fixed between a base station and a mobile station of a CDMA mobile communication system, comprising:

a clock signal generation unit for receiving a 10MHz, Time Of Day (TOD) and 1 Pulse Per Second (PPS) signal from a Global Positioning System (GPS) receiving unit and generating a 1st even second clock signal in synchronization with the 1 PPS and a 3rd even second clock signal which is obtained by delaying the 1st even second clock signal by a maximum bidirectional propagation delay time between a base station and a relay unit;

a signal processing unit for receiving the 3rd even second clock signal from the clock signal generation unit and modulating a pilot channel, a synchronous channel and a call channel of a forward link from a base station to a mobile station in synchronization with the 3rd even second clock signal; and

a signal processing unit for receiving the 1st even second clock signal from the clock signal generation unit, demodulating a backward link channel from the mobile station to the base station in synchronization with the 1st even second clock signal and modulating a communication channel of a forward link from the base station to the mobile station by expediting by the maximum bidirectional propagation delay time between the base station to the relay unit.